

NO. XXVII.—ODONATA.

By HERBERT CAMPION.

(COMMUNICATED BY PROF. J. STANLEY GARDINER, M.A., F.R.S., F.L.S.)

Read 16th January, 1913.

THE Dragonflies collected by the first (1905) Percy Sladen Trust Expedition to the Indian Ocean, which I have had under review, were reported upon by Mr F. F. Laidlaw (Trans. Linn. Soc. London, ser. 2, Zool., xii. pp. 87—89, 1907), and his report included a statement of the literature which he had consulted.

The majority of the Odonata which form the subject of the present paper were obtained by Mr Hugh Scott in the Seychelles Archipelago during eight months ending in March, 1909. Simultaneously, Mr J. C. F. Fryer, who accompanied Mr Scott to the Indian Ocean, explored the island of Aldabra, and obtained *Pantala flavescens* Fabr., *Tramea basilaris* Pal. de Beauv., *Anax tristis* Hag., *Lestes ochraceus* Selys (*forma*), and *Ischnura senegalensis* Ramb. Mr H. P. Thomasset, in addition to taking an active part in the collecting in Mahé, presented a pair of *Lestes ochraceus* (*forma*) taken by himself in Cosmoledo in 1907. Finally, Mr R. P. Dupont, Curator of the Botanic Station in Mahé, also assisted Mr Scott during his visit to that island, and moreover made a collection in the island of Assumption in 1910, after the return of the Expedition to England. His collection consists of the following species:—*Diplacodes lefebvrei* Ramb., *Philonomon luminans* Karsch, *Pantala flavescens* Fabr., *Rhyothemis semihyalina* Desj., *Tramea basilaris* Pal. de Beauv., and *Tramea limbata* Desj. (*forma*).

Although no species new to science were discovered, there has to be recorded a new and remarkable case of structural dimorphism affecting the ♀ of *Agriocnemis pygmaea* Selys (Synopsis). Beyond this, the female of *Gynacantha stylata* Martin has been found, and other interesting additions have been made to our knowledge of the forms inhabiting the islands. The occurrence of *Philonomon luminans* and of a representative of the Subfamily Lestinae in those islands appears to be now recorded for the first time. Apparently, the only Dragonfly previously published from Aldabra was the almost cosmopolitan *Pantala flavescens*, and I believe that hitherto the Odonate-fauna of Assumption and Cosmoledo has remained entirely unknown.

I have much pleasure in acknowledging my indebtedness to two Continental experts, for kind assistance rendered by them in the preparation of this report. Dr F. Ris, of Rheinau, Switzerland, has obligingly given me the benefit of his unrivalled knowledge

of the Libellulinae in connection with the less-known species falling into that Subfamily: he has also devoted much time to the study of the *Agriocnemis* from the Seychelles. Monsieur René Martin, of Paris, has been so good as to identify several other species belonging to a Dragonfly-fauna with which he is so well acquainted. His valuable paper on the "Odonates des Iles Séchelles" (Mém. Soc. Zool. France, ix. pp. 101—112 (1896)) has also been freely consulted. Moreover, frequent use has been made of the monographs by both these specialists which are appearing in the Selysian Catalogue ("Collections Selys").

The subjoined list enumerates not only the species collected in 1908—1910 in Seychelles, Assumption, Aldabra, and Cosmoledo, but also such additional species as I have found to be recorded elsewhere from the same islands. It may be added that Dr Philip P. Calvert mentions a male Dragonfly in the United States National Museum collection, from the Seychelles, collected by Dr W. L. Abbott, which may belong to *Agrion insulare* Selys (Proc. U. S. Nat. Mus., xviii. p. 142 (1895)). Notices of species not represented in the present collection are enclosed within brackets. No attempt has been made to state the full synonymy of the species discussed, but the original descriptions are always cited, and reference is also made to the Selysian Catalogue in all those cases where the present incomplete state of that great work has permitted of this being done.

### Libellulidæ. Libellulinae.

#### 1. *Orthetrum stemmale wrighti* (Selys).

*Libellula wrightii* Selys, Ann. and Mag. Nat. Hist. (4), iii. p. 272 (1869).

*Orthetrum stemmale wrighti* Ris, Coll. Selys, Libell., fasc. x. p. 219 (1909).

*Loc.* Seychelles. Mahé: 5 ♂ (Dupont); 2 ♂, Cascade Estate; 3 ♂, Long Island, VII. 1908; 1 ♂, 1 ♀, taken *in coitu*, Port Glaud, 5. XI. 1908. Silhouette: 8 ♂, 4 ♀, plateau of Mare aux Cochons, IX. 1908. Bird Island: 1 ♀ (Fryer), VII. 1908. Dennis Island: 1 ♀ (Fryer), VIII. 1908. Praslin, 1905. Coetivy, 1905.

The younger males in the series closely resemble the females in the matter of coloration, but when full maturity has been attained the yellow markings on the face, thorax and abdomen are entirely obscured by blue pruinosity; even the yellow terminal appendages take on a bright purple colour. One or two aged females also tend to become pruinose. This is the Seychellean form of a species occurring on the Continent of Africa (*O. stemmale capense*), in Madagascar (*O. stemmale lemur*), and in Mauritius and Réunion (*O. stemmale stemmale*). De Selys (*op. cit.* p. 273) mentioned *wrighti* as occurring also in Mauritius, but Ris (*loc. cit.*) has referred this insect to the typical form, *O. stemmale stemmale*.

According to Mr Laidlaw's report, a long series of *O. wrighti* were obtained from the Chagos Archipelago by the Expedition of 1905. No specimens from that locality, however, are now discoverable in the collection, but the data which he quotes are found to apply to a certain number of specimens of *Diplacodes trivialis*, a species which Laidlaw failed to record at all from Chagos. So far as our knowledge goes, therefore the Seychelles Islands remain the sole habitat of *O. stemmale wrighti*.

2. *Diplacodes lefebvrei* (Ramb.).

{ *Libellula lefebvrii* Ramb., Ins. Névr., p. 112 (1842).

{ *Libellula tetra* Ramb., *op. cit.*, p. 119 (1842).

*Diplacodes lefebvrei* Ris, Coll. Selys, Libell., fasc. xii. p. 465 (1911).

*Loc.* Assumption Island: 1 ♂ (Dupont), 1910.

Rambur's *Libellula lefebvrii*, described from Egyptian females, and *Libellula tetra*, representing the Mauritian male, are considered by Dr Ris to be conspecific, and *tetra* becomes a mere synonym of *lefebvrii*. The species is recorded from numerous localities in Africa, and from Asia Minor, Arabia, Sokotra, Madagascar, Mauritius, and Réunion.

3. *Diplacodes trivialis* (Ramb.).

*Libellula trivialis* Ramb., Ins. Névr., p. 115 (1842).

*Diplacodes trivialis* Ris, Coll. Selys, Libell., fasc. xii. p. 468 (1911).

*Loc.* Seychelles. Mahé: 3 ♂, 1 ♀ (Dupont). Silhouette: 9 ♂, 6 ♀, plateau of Mare aux Cochons, IX. 1908; 1 ♀, Mont Pot-à-eau about 1500 feet, VIII. 1908. Praslin, 1905. Coetivy, 1905.

A common East-Indian species, known also from Suez and Queensland.

4. *Philonomon luminans* (Karsch).

*Sympetrum luminans* Karsch, Berl. Ent. Zeitschr., xxxviii. p. 22 (1893).

*Philonomon luminans* Ris, Coll. Selys, Libell., fasc. xiii. p. 697 (1911).

*Loc.* Assumption Island; 3 ♂ (Dupont), 1910.

A widely-distributed species in Africa; the British Museum possesses single specimens from Zanzibar and Abyssinia.

5. *Pseudomacromia luctifera* (Selys)\*.

*Zygonyx* (?) *luctifera* Selys, Ann. and Mag. Nat. Hist. (4), iii. p. 273 (1869).

*Schizonyx luctifera* Karsch, Berl. Ent. Zeitschr., xxxiii. p. 281 (1890).

*Loc.* Seychelles. Mahé: 1 ♂, Morne Blanc, 800 feet, 1908; 1 ♀, Long Island, VII. 1908; 2 ♂ (Dupont). Praslin, 1905.

The following particulars are given in view of the variability of the species in respect that the triangle and subtriangle in the forewing may be either free or traversed:—In all the specimens the anterior triangles are free. In one male the subtriangle in the left forewing is 1-celled, becoming 2-celled, while in the right forewing it is 2-celled; in another male the subtriangle in both forewings is 2-celled, and in the remaining male and in the female it is 3-celled.

Various opinions have been held respecting the true systematic position of this endemic species, but Dr F. Ris informs me that he has now come to the conclusion that it should go into *Pseudomacromia*, an African genus already including two species from Madagascar which he considers to be the nearest allies of the insect before us. The British Museum possesses a pair (♂ and ♀) presented by Monsieur René Martin in 1900.

\* See postscript, p. 446.



[6. *Zygomma petiolatum* Ramb.

*Zygomma petiolatum* Ramb., Ins. Névr., p. 30, pl. 2, fig. 4d (1842).

*Zygomma sechellarum* Martin, Mém. Soc. Zool. France, ix. p. 103 (1896); Laidlaw, Trans. Linn. Soc. London, ser. 2, Zool., xii. p. 89 (1907).

*Loc.* Seychelles and Chagos Islands, 1905.

Not represented in the present collection.

Concerning this species Dr Ris has written to me as follows:—"I cannot find any appreciable difference between specimens from the Seychelles and a series from Borneo and another from Cape York which I possess. The differences are in size, which is variable, and in colour of wings, which is variable according to maturity." I may add that I had arrived independently at the conclusion that Martin's insect could not be separated specifically from Rambur's.]

7. *Tholymis tillarga* (Fabr.).

*Libellula tillarga* Fabr., Ent. Syst., Suppl., p. 285 (1798).

*Loc.* Seychelles. Mahé: 1 ♂ (Dupont). Praslin, 1905.

A common East-Indian species, recorded, *inter alia*, from Mauritius and Réunion.

8. *Pantala flavescens* (Fabr.).

*Libellula flavescens* Fabr., Ent. Syst., Suppl., p. 285 (1798).

*Loc.* Seychelles. Mahé: 2 ♂ (Dupont); 2 ♂, 1 ♀, Long Island, VII. 1908; Praslin, 1905. Aldabra: 10 ♂, 3 ♀ (Fryer). Assumption: 4 ♂, 8 ♀ (Dupont), 1910.

"In Aldabra this species began to be seen in December, beginning of wet season" (Fryer).

A Dragonfly of exceptionally wide distribution, occurring in all the warmer parts of the world, but not in Europe.

9. *Rhyothemis semihyalina* (Desj.).

*Libellula semihyalina* Desj., Rapport Soc. Maurice, i. (1832).

*Loc.* Seychelles. Mahé: 2 ♂, 8 ♀ (Dupont); Praslin, 1905; Coetivy, 1905. Assumption Island: 1 ♀ (Dupont), 1910.

A species described from Mauritius, and known also from various parts of Africa.

10. *Tramea basilaris* (Pal. de Beauv.).

*Libellula basilaris* Pal. de Beauv., Ins. Afr. Amér., p. 171, t. 2, f. 1 (1805).

*Loc.* Aldabra: 1 ♂ (Fryer). Assumption Island: 1 ♀ (Dupont), 1910.

This African species has been recorded from Madagascar and the Glorioso Islands, and the British Museum Collection contains specimens from Bechuanaland, Mashonaland, Natal, the Congo, and the Gold Coast. There are certain other specimens in the same collection, from Ceylon, which I consider should be referred to this species, rather than to the Indian form, *T. burmeisteri* Kirby.



11. *Tramea limbata* (Desj.), *forma*.

{ *Libellula limbata* Desj., Rapport Soc. Maurice, i. (1832).

{ *Libellula mauriciana* Ramb., Ins. Névr., p. 34 (1842).

*Tramea limbata* Calvert, Proc. U. S. Nat. Mus., xviii. p. 121 (1895); Ent. Nachr., xxii. p. 217 (1896).

*Tramea continentalis* Selys, Mitth. Mus. Dresd., iii. p. 299 (1878); Martin, Mém. Soc. Zool. France, ix. p. 102 (1896); Laidlaw, Trans. Linn. Soc. London, ser. 2, Zool., xii. p. 88 (1907).

*Tramea madagascariensis* Kirby, Trans. Zool. Soc. London, xii. p. 317 (1889).

*Loc.* Seychelles. Mahé: 4 ♂, 3 ♀ (Dupont). Silhouette: Mare aux Cochons, 1 ♂, 1 ♀, IX. 1908. Praslin, 1905. Coetivy, 1905. Assumption Island: 3 ♂, 1 ♀ (Dupont), 1910. Chagos Island, 1905.

Dr Ris has very kindly given me a very full statement of his views, not yet published, respecting *Tramea limbata* and the various geographical forms which it assumes. The species was originally described from Mauritius, and under the single specific name Dr Ris has gathered together numerous forms, usually regarded as distinct species, ranging from Dakar in Senegal on the West, to New Caledonia and Samoa on the East. Restricting ourselves to the area with which we are at present more directly concerned, it may be said that, while the particular specimens to which the names *continentalis* Selys (from Dakar) and *madagascariensis* Kirby (from Madagascar) were applied by their authors are themselves sufficiently distinct from each other and from typical *limbata*, nevertheless, specimens may be produced from both of these localities which closely resemble each other, and to that extent differ from the typical forms of their respective habitats. For this reason the use of the names *continentalis* and *madagascariensis* is attended with great difficulty, and it seems to be preferable, for the present at all events, to designate as *T. limbata* (*forma*) any specimen falling within the limits of variation of the species, but not agreeing exactly with the typical form from Mauritius.

Viewing as a whole the series obtained by the two Percy Sladen Trust Expeditions, we see how variable the species is in respect of the size and form of the reddish-brown basal spot on the hind wings. Thus, in the three males from Assumption Island (1910) the basal spot is bounded externally by an almost straight line drawn downwards from the cubito-anal cross-vein. Some of the Seychelles males are similar to these, but in others the basal patch extends a little further outwards, while in two males from the Chagos Archipelago (1905) the spot is very nearly as full as it is in typical *limbata* from Mauritius. There is also variation in respect that the spot may either continue to the hind margin of the wing or else curve inwards at some point before the margin is reached.

In the females the spot is not less variable. In at least one of them (that from Silhouette) it encloses a large hyaline space and is decidedly convex outside. It is interesting to note how nearly some of the females approximate towards the specimen from Madagascar which Mr W. F. Kirby presumed to be the female of his *madagascariensis*. In addition to variability in this respect, one of the females, from Mahé, has 8 antenodal cross-veins in each hind wing, instead of the normal number of 7.

**Corduliinæ.**

[12. *Hemicordulia similis* (Ramb.).

*Cordulia similis* Ramb., Ins. Névr., p. 147 (1842).

*Hemicordulia delicata* Martin, Mém. Soc. Zool. France, ix. p. 105 (1896).

*Hemicordulia similis* Martin, Coll. Selys, Cord., fasc. xvii. p. 14 (1906).

Not represented in the collection.

*Hemicordulia* includes several generalised members of the Subfamily, found in the Oriental, Australasian, and Oceanic regions; but, although it is represented in Madagascar by two species, one of them being *H. similis*, it is not known to occur on the Continent of Africa.]

**Æschnidæ. Æschninæ.**

13. *Anax tristis* Hag.

*Anax tristis* Hag., Verh. zool.-bot. Ges. Wien, xvii. p. 35 (1867); Ris, Ann. Soc. Ent. Belg., lv. p. 320 (1911).

*Anax goliath* Selys, Rev. Zool., xxiii. p. 178 (1872); Martin, Coll. Selys, Aesch., fasc. xviii. p. 15 (1908).

*Loc.* Aldabra: 1 ♀, Basin Cabri, Picard Island (Fryer).

This huge Dragonfly, to which Ris (*loc. cit.*) has lately restored the name *tristis*, is widely spread over the Continent of Africa, and occurs also in Madagascar.

14. *Anax guttatus* (Burm.).

*Aeschna guttata* Burm., Handb. Ent., ii. p. 840, n. 14 (1839).

*Anax guttatus* Martin, Coll. Selys, Aesch., fasc. xviii. p. 23 (1908).

*Loc.* Seychelles. Mahé: 4 ♂ (Dupont).

A species widely distributed in the Oriental Region, and occurring also in Queensland, but not recorded from Continental Africa.

15. *Hemianax ephippiger* (Burm.).

*Aeschna ephippigera* Burm., Handb. Ent., ii. p. 840, n. 15 (1839).

*Hemianax ephippiger* Martin, Coll. Selys, Aesch., fasc. xviii. p. 28 (1908).

*Loc.* Seychelles. Mahé: 1 ♀, Cascade Estate.

Common both in Africa and Asia.

16. *Gynacantha stylata* Martin.

*Gynacantha stylata* Martin, Mém. Soc. Zool. France, ix. p. 106 (1896); Coll. Selys, Aesch., fasc. xx. p. 181 (1909).

*Loc.* Seychelles. Silhouette: 1 ♀, Mont Pot-à-eau, about 1500 feet, VIII. 1908; 1 ♀, Mare aux Cochons, IX. 1908.

The specimen taken in August had evidently been ovipositing, for the ventral surface of the terminal segments is coated with brown mud.



*Gynacantha* is one of the dominant genera of Aeschninæ, and has numerous representatives in Africa, Asia, and America. *G. stylata* was described from a unique ♂ from Mahé, preserved in M. Martin's collection, and has been stated by that author to resemble *G. bispina* Ramb., a species occurring in Mauritius, Madagascar, and Africa. The following particulars of the ♀, which hitherto has been unknown, can now be given:—Total length 68·5 mm. Length of abdomen, including anal appendages, 54·5 to 57 mm. Coloration of head, thorax, pterostigmata, and legs as in male. Wings faintly tinged with yellow at the base as far as the triangle; the yellow fills the costal and subcostal spaces before the nodus, and extends along the costa until the pterostigma is reached. Pterostigma 4·5 mm. in length, surmounting from 4 to 5 cells. Reticulation reddish-brown; membrane with copperish glint. The branch of the radial sector departing before the level of the pterostigma brace-vein. Two cells in subtriangle. Forewing 47 mm. long, and with 22 to 25 antenodal and 18 to 19 postnodal cross-veins. 5 to 8 cells in triangle. Hindwing 46 mm. long; 16 to 18 antenodals and 20 to 22 postnodals. Five cells in triangle. Anal loop with 11 cells (August specimen) or 12 cells (September specimen); supplemental anal loop 5-celled, 6-celled or 7-celled.

Abdomen reddish-brown, with the greenish coloration of the thorax reappearing upon parts of segments 1, 2, and 3. Segment 9 carrying below a pair of apical two-jointed filaments. Segment 10 ending above in an obtuse point; produced below into a tongue directed backwards and downwards, presenting a glossy-black, triangular, concave surface dorsally, and terminating with a pair of long, curved, glossy-black spines, forming a fork. Anal appendages 6·5 mm. long (about the length of segments 8, 9, and 10 taken together), flat, narrow, lanceolate, clothed with short hairs, reddish-brown. Ovipositor-spine reddish, very smooth and glossy, curving upwards towards the end of the abdomen, which its length about reaches, thin, and sharply pointed.

The specimen obtained in September, which may be taken as the type of the ♀, has been placed in the British Museum.

### Agrionidæ. Lestinæ.

17. *Lestes ochraceus* Selys (Synopsis) (*forma*)\*.

*Lestes ochracea* Selys (Synopsis), Bull. Acad. Belg. (2), xiii. p. 325 (1862).

*Loc.* Aldabra: 8 ♂, "found round pools in rocks at all seasons" (Fryer). Cosmoledo: 1 ♂, 1 ♀, 1907 (Thomasset).

For the identification of this species I am indebted to Monsieur René Martin, who says, however, that he finds some differences between the specimens submitted to him and those which he considers to represent true *ochraceus*. He adds that there are, in Africa, several closely-allied species falling into the *ochraceus* group.

*Lestes ochraceus* was described by De Selys from the male sex alone, the habitat being given as Africa, probably the Cape of Good Hope. The terminal segments of the abdomen were unknown to De Selys.

\* See postscript, p. 446.

I think it advisable to give the following brief particulars of the present insect, in view of the many respects in which it differs from the one described by De Selys:—

♂. Length of abdomen, including anal appendages, 34·5 mm. Hindwing 21·5 mm. in length, with 10 (occasionally 11) postnodal cross nervures. Colour characters rather variable. Labium yellowish. Labrum greenish-grey. Vertex chocolate. Ocelli garnet colour. Pronotum mostly yellowish. Dorsum of meso- and meta-thorax chocolate-brown, with a variable amount of greenish-yellow. Sides and lower surface of thorax yellowish, with a pair of black rounded spots on the pectus. Femora of forelegs yellowish, bordered with black; tibiæ with a median black line on the upper surface. Mid- and hindlegs yellowish, not lined with black. Tarsi of all legs partly black; claws and spines black. Wings hyaline; reticulation reddish-brown; pterostigmata dark chocolate-brown, covering two cells. Abdomen generally glossy dark brown; segments 1, 2, and 10 partly yellowish; 3, 4, 5, and 6 with blackish markings near the apex; 7 largely, and 8 and 9 wholly, blackish; 8 with numerous dark denticulations on the apical margin. Upper anal appendages yellow, blackish at the tips, the inner margin with a large sharp tooth above and two smaller blunt teeth below; several minute blackish denticulations on the outer margin; lower appendages blackish above, about a third of the length of the upper.

♀. Length of abdomen 32·5, of hindwing 21·5 mm. Postnodals 11 (in 3 wings) to 12 (left forewing). The single ♀ in the collection (from Cosmoledo) appears to be an aged individual, inasmuch as the wings are decidedly smoky, as well as considerably frayed. The insect generally is darker than the ♂, the whole of the face, head, and abdomen being of a uniform blackish brown. A lighter colour, however, is observable in portions of the thorax, and the legs are of a warm brown. The anal appendages, which are coloured like the abdomen, are a little shorter than the 10th segment.

### Agrioninæ.

#### 18. *Allolestes maclachlani* Selys.

*Allolestes M'Lachlani* Selys, Ann. and Mag. Nat. Hist. (4), iii. p. 275 (1869).

*Loc.* Seychelles. Mahé: 1 ♂ (immature), Morne Seychellois, over 1500 feet, 4. II. 1909; 1 ♀, Cascade Estate, about 800 feet; 1 ♀, from near Morne Blanc. Silhouette: 1 ♀ (immature), Pointe Étienne, low cultivated country, IX. 1908. Praslin, 1905.

#### 19. *Allolestes nigra* Martin.

*Allolestes nigra* Martin, Mém. Soc. Zool. France, ix. p. 107 (1896).

*Loc.* Seychelles. Silhouette: 1 ♂ (mature), Mare aux Cochons, IX. 1908.

The genus *Allolestes* has Oriental affinities and is confined to the Seychelles, and the two known species are extremely rare in collections. They are included among the remarkable Agrionine forms having long pterostigmata, and sectors interpolated between the principal veins of the wings, as in the true *Lestinae*.

#### 20. *Leptocnemis* (= *Hemicnemis*) *bilineata* (Selys).

*Trichocnemis bilineata* Selys, Ann. and Mag. Nat. Hist. (4), iii. p. 276 (1869).

*Loc.* Seychelles. Mahé: 8 ♂, 2 ♀, from near Morne Blanc; 2 ♂, Cascade Estate; 1 ♂



(Dupont). Silhouette: 4 ♂, Mare aux Cochons, IX. 1908; 1 ♂, Pointe Étienne, low cultivated country, IX. 1908. Praslin, 1905.

[21. *Leptocnemis* (= *Hemicnemis*) *cyanops* (Selys).

*Trichocnemis cyanops* Selys, Ann. and Mag. Nat. Hist. (4), iii. p. 275 (1869).

This species was described by Baron E. de Selys-Longchamps from a male, or males, taken in the Seychelles by Prof. E. Perceval Wright, but it does not appear to have been re-discovered by later investigators.

Through the courtesy of Mr H. M'Lachlan, I have had an opportunity of examining the type ♂, the sole representative of the species, contained in the late Mr R. M'Lachlan's collection. Upon comparing it with the type of *L. bilineata*, preserved in the same collection, and also with specimens taken by the Expeditions of 1905 and 1908—9, I failed to discover in it any distinctive characters such as would enable me to refer other specimens to the same species with any degree of certainty.

M. René Martin says of this insect:—"Spéciale aux Séchelles, où elle doit être rare. Peut-être *H. cyanops* n'est-il pas une espèce différente de *H. bilineata*. On trouve des individus du *bilineata* qui ont, mélangés, les caractères assignés par M. de Selys à chacune des espèces" (Mem. Soc. Zool. France, ix. p. 109 (1896)).]

22. *Ceriagrion glabrum* (Burm.).

*Agrion glabrum* Burm., Handb. Ent., ii. p. 821, n. 18 (1839).

*Loc.* Seychelles. Silhouette: 6 ♂, 3 ♀, Mare aux Cochons, IX. 1908; 4 ♂, 1 ♀, Pointe Étienne, low cultivated country, IX. 1908. Praslin, 1905.

I have seen this pretty brick-red Dragonfly from Madagascar, Sokotra, and from numerous localities in Continental Africa.

23. *Ischnura senegalensis* (Ramb.).

*Agrion senegalense* Ramb., Ins. Névr., p. 276 (1842).

*Loc.* Aldabra: 1 ♀ (Fryer).

Widely distributed in the tropical parts of Africa and Asia, and recorded also from the Seychelles.

24. *Agrionemmis pygmæa* Selys (Synopsis).

*Agrionemmis pygmæa* Selys (Synopsis), Bull. Acad. Belg. (2), xliii. p. 146 (1877).

*Agrionemmis exilis* Martin, Mém. Soc. Zool. France, ix. p. 110 (1896); Laidlaw, Trans. Linn. Soc. London, ser. 2, Zool., xii. p. 89 (1907) (*nec* Selys (Synopsis)).

*Loc.* Seychelles. Mahé: 1 ♂, 1 ♀, marshes on coastal plain at Anse aux Pins and Anse Royale, I. 1909. Silhouette: 14 ♂, 15 ♀, Pointe Étienne, low cultivated country, IX. 1908; 1 ♂, Mare aux Cochons, IX. 1908. Praslin, 1905. Coetivy, 1905.

Dr Ris, who has specially studied the genus, has been good enough to examine the whole of the *Agrionemmis* material brought from the Seychelles by the Expeditions of 1905 and 1908—9. He finds that *A. exilis*, the species to which Mr Laidlaw referred the specimens obtained in 1905, is not represented at all. The males are rather large, but

all of them belong undoubtedly to *A. pygmaea*, as defined in the Selys-Synopsis. In that species the male is characterised especially by the very peculiar shape of the inferior anal appendages, and in that respect our specimens agree perfectly with a series from Colombo, Ceylon, which Dr Ris has examined, and also with odd specimens from Australia. The prothoracic lobe is very much the same in all the males which he has studied.

The distinguishing feature of the typical *pygmaea* female is the form of the hind margin of the prothorax. This form is unique in the genus, the margin being without a backward prolongation or lobe, almost straight, and with two very minute and very laterally-placed tubercles, a condition entirely different from that found in the corresponding male. This form of the female Dr Ris has seen from Ceylon, Java, Queensland, and Sydney.

In addition to the regular males and females just considered, the Percy Sladen Trust Collections contain a certain number of females which belong to an unknown form. These females are characterised by the pronotum having a thin, elevated, quadrangular, and very slightly emarginated median lobe, whereas the normal females are devoid of any lobe whatever. At first sight, it seemed as if we were dealing here with a distinct species, but, owing chiefly to the absence of any males which could be referred to a second species, Dr Ris is now practically certain that these females represent a very curious and interesting case of structural dimorphism. Structural dimorphism in the same sex, as distinguished from colour dimorphism, is of rare occurrence in Dragonflies, but Dr Ris has drawn my attention to another instance afforded by the Mediterranean Aeshnine *Boyeria irene* Fonsc., in the female of which the terminal appendages may be either long or short. Furthermore, in his newly-published monograph of "The North American Dragonflies of the Genus *Aeshna*," Dr E. M. Walker figures variations in the length and depth of abdominal segments 1—4, as well as variations in the length of the anal appendages, in the females of certain North American species of that genus.

In *Agriocnemis*, as in the closely-allied genus *Ischnura*, the females are subject to rufous dimorphism, and the present species affords no exception to the rule. In the Seychellean females, therefore, we get two distinct morphological forms, and two colour phases of each form. The matter may be tabulated thus:—

|   |                                    |
|---|------------------------------------|
| Hind-margin of prothorax not lobed ( <i>forma typica</i> )      | { Ground-colour of body green, ♀a  |
|   | { Ground-colour of body orange, ♀b |
| Hind-margin of prothorax distinctly lobed ( <i>forma nova</i> ) | { Ground-colour of body green, ♀c  |
|   | { Ground-colour of body orange, ♀d |

The four females from Coetivy (1905) are all of the orange, lobed form (♀d). The 16 females from Mahé and Silhouette (1908—9) can be grouped in this way:—

|   |    |             |
|---|----|-------------|
| 2 specimens.....                        | ♀a | } Non-lobed |
| 2     "     .....                       | ♀b |             |
| 3     "     .....                       | ♀c | } Lobed     |
| 8     "     .....                       | ♀d |             |
| 1 specimen of uncertain coloration..... |    |             |

The 16 lobed females, therefore, represent as much as 80 % of the total number of females collected (20).

The ♀♀ *b* and *d* are alike in coloration ; and, so far as can be judged from the material which is available, there are also no colour differences between ♀ *a* and ♀ *c*.

The synonymy of this species is in an unsettled state, and the identity of Rambur's *pygmaea* (1842) is very uncertain. It has therefore been deemed advisable, for the purposes of this paper, to designate the Seychellean insect as the *pygmaea* of the Selys-Synopsis, where there is a very good description, indicating the structural characters of both sexes.

The distribution of *pygmaea* is astonishingly wide, extending as it does from the Seychelles on the West to Australia on the East : such a distribution, unaccompanied by local modification in different parts of the range, suggests recent and rapid dispersal of the species.

25. *Teinobasis alluaudi* (Martin).

*Telebasis alluaudi* Martin, Mém. Soc. Zool. France, ix. p. 110 (1896).

*Loc.* Seychelles. Silhouette : 1 ♂, Mare aux Cochons, IX. 1908 ; 1 ♂, Pointe Étienne, low cultivated country, IX. 1908. Mahé : 2 ♂, Mare aux Cochons district, about 1500 feet, I.—II. 1909.

Monsieur René Martin makes the following observations respecting this species (*op. cit.* p. 111) :—" Paraît assez commun à l'île Mahé, où le R. P. Philibert a pris un certain nombre de mâles et de femelles. Cette espèce, qui n'a jamais été observée qu'à Mahé, est la seule *Telebasis* qui ne soit pas de l'Asie tropicale et de l'Océanie. Toutes les autres *Telebasis* habitent les Philippines, les Moluques, Célèbes, la Nouvelle-Guinée, Singapore. Les espèces les plus voisines de *T. alluaudi* sont la *T. lorquini* des Moluques, et la *T. rufithorax* de l'île d'Obi." It will be observed that the present collection contains specimens from Silhouette as well as from Mahé. It also appears that the species is now known from Madagascar, for the British Museum possesses a female from the East of that island, presented by M. Martin in 1899.

I follow Mr W. F. Kirby in retaining the term *Telebasis* for the New World genus which De Selys renamed *Erythrargrion* ; and for the Oriental genus to which the species under consideration belongs I adopt the name of *Teinobasis* which Mr Kirby has proposed for it. This course has been taken, in dealing with American Dragonflies, by Prof. P. P. Calvert and Mr R. A. Muttikowsky, and the reasons for doing so appear to be adequate.

#### GENERAL CONCLUSIONS.

The collection from the coral island of Assumption might have been made on the mainland of Africa without occasioning any surprise, as it consists entirely of Libellulinae belonging to Ethiopian species. The few Dragonflies from Aldabra, another coral atoll, might also have been obtained in Africa.

When we come to the granitic islands constituting the Seychelles Archipelago, however, we find the number of purely African species reduced to two, viz. *Rhyothemis semihyalina* and *Ceriagrion glabrum*. Three others are common to the Ethiopian and Oriental regions: these are *Tramea limbata*, *Hemianax ephippiger*, and *Ischnura senegalensis*. The single Corduliine, at one time thought to be peculiar, is now considered to be



conspecific with the Madagascar *Hemicordulia similis*. *Teinobasis alluaudi* is another species which is common to Madagascar and the Seychelles. The forms which are really peculiar to the Archipelago are *Orthetrum stemmale wrighti*, *Pseudomacromia luctifera*, *Gynacantha stylata*, *Allolestes macleachlani*, *Allolestes nigra*, and *Leptocnemis bilineata*. *Pantala flavescens* belongs to no particular zoogeographical region. The remaining species appertain to the Oriental fauna, and are as follows:—*Diplacodes trivialis*, *Zyxomma petiolatum*, *Tholymis tillarga*, *Anax guttatus*, and *Agriocnemis pygmaea*. An analysis of the indigenous species and subspecies reveals the interesting fact that the three Anisoptera—*Orthetrum stemmale wrighti*, *Pseudomacromia luctifera*, and *Gynacantha stylata*—are allied to forms found in Africa or Madagascar, while the three Zygoptera—*Allolestes macleachlani*, *A. nigra*, and *Leptocnemis bilineata*—have affinities with Asiatic forms.

It may be taken that the Odonate-fauna of the Seychelles is now fairly well known, and the apparent deficiencies in it are quite remarkable. For instance, notwithstanding decided relation with the Oriental region, there is no representative of the characteristic Asiatic genus *Neurothemis* (Libellulinae). The Libelluline genera *Palpopleura*, *Crocothemis*, *Brachythemis*, and *Trithemis* are also unrepresented, although they occur quite commonly both in Asia and Africa. Furthermore, it is worthy of remark that the important Subfamilies Calopteryginae and Gomphinae have never been met with.

The presence of larval water-mites (Hydrachnidæ) is a very noticeable feature of some of the specimens of *Tramea limbata* from the Seychelles, and also of the *Tramea basilaris* from Aldabra. In some instances the thorax carries only two or three of the large ruddy mites, while in other cases the sides and under surface of the thorax are thickly encrusted with them. It would appear that these Arachnids are not met with at all commonly upon the bodies of Anisopterous Dragonflies, and one of the few other cases of the kind which have come under my notice concerns an Australian *Tramea*. *Sympetrum meridionale* Selys furnishes a notorious instance of larval water-mites clustering in great numbers on the wings of an Anisopterous species, and Mr K. J. Morton possesses a specimen from Asia Minor whose wings bear not less than 220 of these curious little creatures. Among the Zygoptera from the Seychelles, at least one specimen of *Agriocnemis pygmaea* has mites on the sternum. The nature of the relation subsisting between Acari and their Dragonfly hosts is not at present well understood. (See on this subject Berlese, Gli Insetti, vol. ii. pp. 13 and 26.)

#### POSTSCRIPT.

Since the foregoing was written (June, 1912), I have seen several recent papers by Dr Ris bearing more or less directly upon the species discussed, but unfortunately it has not been found possible to insert references to them.

One of these publications is fasc. xiv. of the Selysian Catalogue, which includes Dr Ris' revision of *Pseudomacromia*. The Seychellean Dragonfly originally described as *Zygonyx luctifera*, and formerly believed to have affinities with certain Asiatic forms, is now definitely referred to the African genus *Pseudomacromia*, as foreshadowed in the present paper.

Again, the ♂ anal appendages of the species designated herein as *Lestes ochraceus* (*forma*) are very similar to those figured by Dr Ris for *Lestes unicolor*, M'Lach., from the River Nile (Gondokoro) and from Madagascar (Sitzungs. Akad. Wissen. Wien., Mathem.-naturw., cxxi., p. 153 (1912)). In connection with the preparation of my report I compared the type ♂ of *L. unicolor* with other males from the Percy Sladen Trust Collection, and I made a note at the time of this similarity in the matter of the anal appendages, in addition to other points of agreement between the insects compared. I also found a still closer agreement between the type ♀ of *L. unicolor* and the ♀ from Cosmoledo. Nevertheless, in view of certain differences which I discovered and to which I attached some importance, I felt disinclined to identify the series from Aldabra and Cosmoledo with M'Lachlan's types from Madagascar.